

SYSTEM AND METHOD UTILIZING MOTION INPUT FOR MANIPULATING A DISPLAY OF DATA

FIELD OF THE INVENTION

The present invention generally relates to the field of digital information appliances and particularly to a system and method utilizing motion input for manipulating a display of data on a digital information appliance.

BACKGROUND OF THE INVENTION

Digital information appliances have become a popular way of providing specialized functionality to a user in a variety of locations. For example, digital information appliances may be utilized to navigate through the Internet, act as an organizer, an electronic book, integrated with a wireless phone, or the like to enable functional elements to be combined per the specific needs of a user. However, the needs of a user are typically not limited to a home or office. Oftentimes, a user desires the use of the digital information appliance in an expanded range of locations. To manipulate data displayed by the digital information appliance, users typically utilize input devices, such as buttons, touch-pads and touch screens. Manipulation of a display of data may include movement of the display of data across a display device, such as scrolling, controlling a display of a cursor, enlarging and reducing a display of the data, or the like.

One known method utilized to manipulate a display of data employed the movement of a mouse. Typically, a mouse requires the use of a surface to actuate a roller assembly. The requirement of a surface made the use of such a device unsuitable for a variety of applications. For example, if a user wanted to manipulate the display of data while the digital information appliance was hand-held, the user would either have to operate an additional input device or find a surface to use a mouse. Adding additional input devices arranged on the appliance necessitated both an increase in the volume of the device and an increase in the surface area of the device as each additional component was included. The requirement of utilizing a surface presents obvious limitations when employed as a hand-held device.

An additional problem encountered by users of digital information appliances is viewing a display of data on a digital information appliance as the distance between the user and the appliance changes. For example, display devices of most hand-held digital information appliances are reduced in area to increase the mobility of the device. However, there are many instances when a display of data is larger than the available display area of the display device. Typically, the data is displayed in a diminished format to enable viewing of a greater portion of the data on the display at one time. For example, a display of data is made smaller so as to enable a greater portion of the data to be displayed on the display device. However, viewing data in a diminished format requires the user to position the digital information appliance closer to the user to view the details of the displayed data. Viewing the data in an enlarged format, although permitting the user to view the data from increased distances, limited the user to viewing a smaller portion of the data.

Therefore, it may be advantageous to provide a system and method for utilizing motion input to manipulate a display of data.

SUMMARY OF THE INVENTION

Accordingly, the present invention is directed to a digital information appliance employing motion input to manipu-

late a display of data. In an exemplary embodiment, a digital information appliance suitable for using motion input and for displaying data includes a detector for detecting rotation of the digital information appliance about an axis and a display device for displaying data. A display of data is manipulated in response to the detected rotation in a manner corresponding to the detected rotation.

To enable greater utilization of a display area of a display device, it may be preferable to use motion input to display more data while the digital information appliance is close to the user and also enable a user to view information on the appliance from an increased distance. In an exemplary embodiment, a detector is used to detect translational movement of the digital information appliance wherein a display of data is at least one of enlarged and reduced in response to the detected translation.

In a further exemplary embodiment, a digital information appliance includes a detector for detecting rotation of the digital information appliance about an axis and a display device for displaying data. A display of data is orientated on the display device with respect to an environment surrounding the digital information appliance. The display of data is manipulated for viewing on the display device so as to keep the display of data orientated on the display device with respect to an environment. Therefore, the orientation of the display of data is not affected by the rotation of the digital information appliance about an axis with respect to a user.

It is to be understood that both the forgoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention as claimed. The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate an embodiment of the invention and together with the general description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The numerous advantages of the present invention may be better understood by those skilled in the art by reference to the accompanying figures in which:

FIG. 1A depicts an exemplary digital information appliance employing the present invention;

FIG. 1B is a side view of the digital information appliance shown in FIG. 1A;

FIG. 1C is a side view of the digital information appliance of FIG. 1A illustrating rotation of the digital information appliance;

FIG. 2A depicts an exemplary digital information appliance as shown in FIG. 1A wherein the digital information appliance is in an original orientation with data including text displayed on the center of a display device;

FIGS. 2B through 2E illustrate the digital information appliance as shown in FIG. 2A wherein manipulation of a display of data including text in response to motion input including rotational movement is shown;

FIG. 3A depicts an exemplary digital information appliance as shown in FIG. 1A wherein a digital information appliance is in an original orientation with data including text displayed on the center of a display device;

FIGS. 3B through 3E illustrate a digital information appliance as shown in FIG. 3A wherein manipulation of a display of data including text in response to motion input including rotational movement along two axes is shown;

FIG. 4A illustrates an exemplary digital information appliance as shown in FIG. 1A wherein a digital information